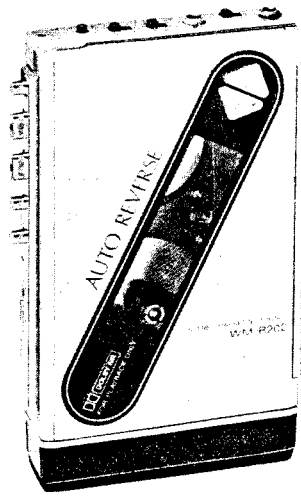
WM-R202

SERVICE MANUAL

AEP Model
UK Model
ET Model



'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

SPECIFICATIONS

Tape transport mechanism type	MT-WMR202-01
Similar mechanism model	WM-F202

Frequency response (DOLBY NR OFF)
- 40–15,000 Hz (playback, with the PB EQ selector set to CrO_2/METAL)
- 40–15,000 Hz (playback, with the PB EQ selector set to NORM)
- 50–9,000 Hz (with the PB EQ selector set to NORM)

Power output
- 4.5 mW + 4.5 mW at DC operation (at 10% harmonic distortion)

Power requirements
- 1.5 V DC
- IEC designation LR6 battery (size AA)
- Rechareable battery (optional)
- External batteries (used in the optional Sony EPB-10 battery case): IEC designation LR6 (size AA) × 2
- DC IN 1.5 V jack accepts:
- Sony AC-D1 AC power adaptor (optional)
  - available in the United Kingdom for use on 240 V ac, 50 Hz
  - available in European countries for use on 220 V ac, 50 Hz
- Sony DCC-70 car battery cord (optional)
  - for use with 12 V car battery

Battery life (hours)

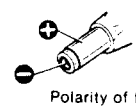
Battery	Tape playback	Microphone recording
Sony SUM-3 (NS) New Super	Approx. 2	Approx. 2
Sony Eveready AM3 alkaline	Approx. 4	Approx. 4
Sony NC-5WM Rechargeable battery (optional) (fully charged)	Approx. 2	Approx. 2

For maximum performance we recommend the use of alkaline battery.

Dimensions
- excl. projecting parts and controls
  - Approx. 69.8 × 110.5 × 19.8 mm (w/h/d) ($2^{3}/_{4} \times 4^{3}/_{8} \times 25/_{32}$ inches)
  - with rechargeable battery case attached
  - Approx. 69.8 × 119.2 × 21.4 mm (w/h/d) ($2^{3}/_{4} \times 4^{3}/_{4} \times 27/_{32}$ inches)
  - with battery case attached
- incl. projecting parts and controls
  - Approx. 76.1 × 112.5 × 23.8 mm ($3 \times 4^{1}/_{2} \times 15/_{16}$ inches)
  - with rechargeable battery case attached
  - Approx. 76.1 × 121.2 × 23.8 mm (w/h/d) ($3 \times 4^{7}/_{8} \times 15/_{16}$ inches)
  - with battery case attached

Weight
- Approx. 210 g (7.2 oz) incl. rechargeable battery case and rechargeable battery not incl. other accessories
- Approx. 210 g (7.2 oz) incl. battery and battery case not incl. other accessories

Note: If a car battery cord or a power adaptor not manufactured by Sony is used, a fuse must be installed in the battery cord, or the ac power adaptor and the polarity of the plug must be as illustrated.



Polarity of the Sony plug

MICROFILM

STEREO CASSETTE CORDER

SONY®

TC

FEATURES

- Auto-reverse function changes the tape playback and recording direction without turning the cassette over.
- This unit can be operated on the rechargeable battery (optional).
- Small-size one-point stereo microphone supplied.
- Dolby NR system reduces tape hiss noise during playback.
- PB EQ selector switch for optimum playback with standard tapes as well as high-performance metal tapes.
- Counter-interial flywheel system for stable tape speed.

SERVICING NOTES

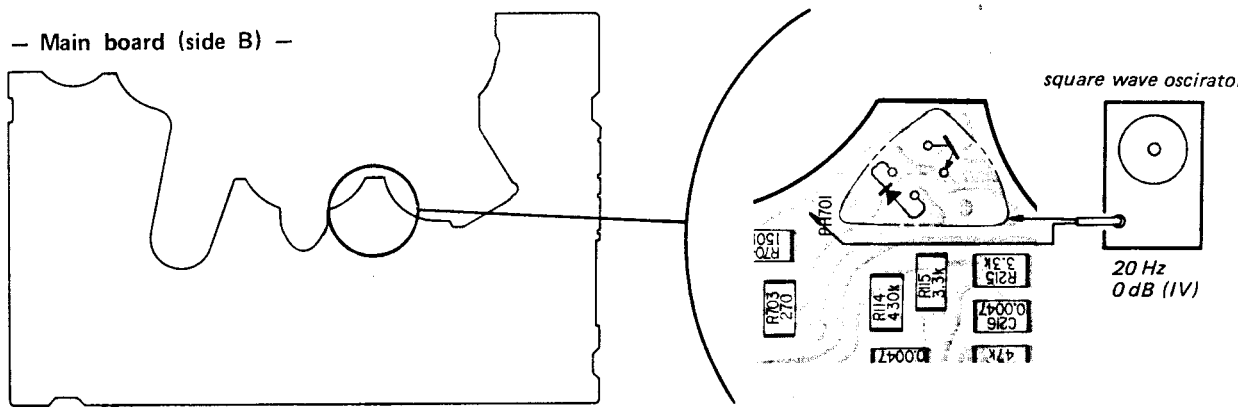
This set detects rotation of reel table by PH701 (Photo interrupter).

It cannot be detected when the main board is removed, because PH701 is mounted on the main board is removed.

Therefore, the auto off circuit and tape end detection will misoperate.

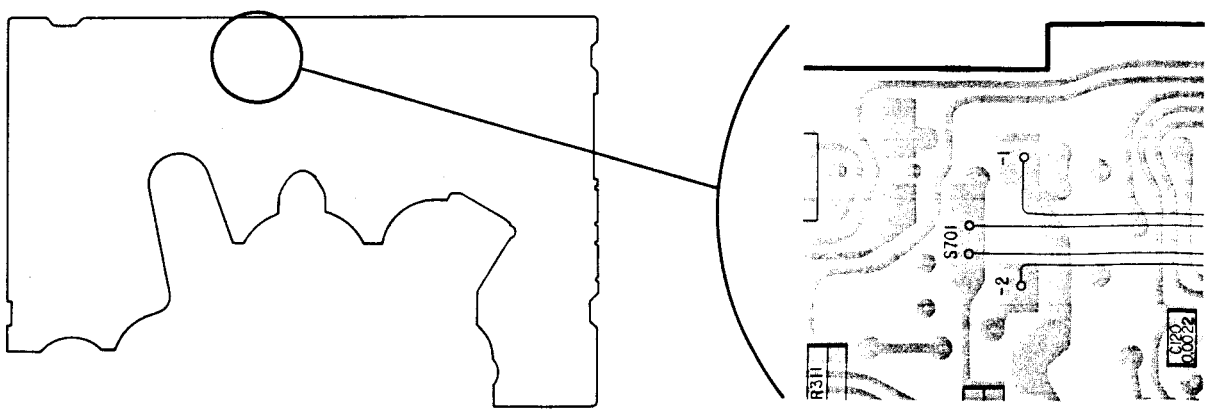
Operation check can be done by the method shown below even when the main board is removed.

– Main board (side B) –



- For PLAY, press the ▶ button and turn only the POWER switch ON.
- For FF and REW, press ▶▶ or ◀◀ button and turn both POWER switch and FF/REW switch ON.

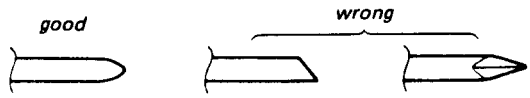
– Main board (side A) –



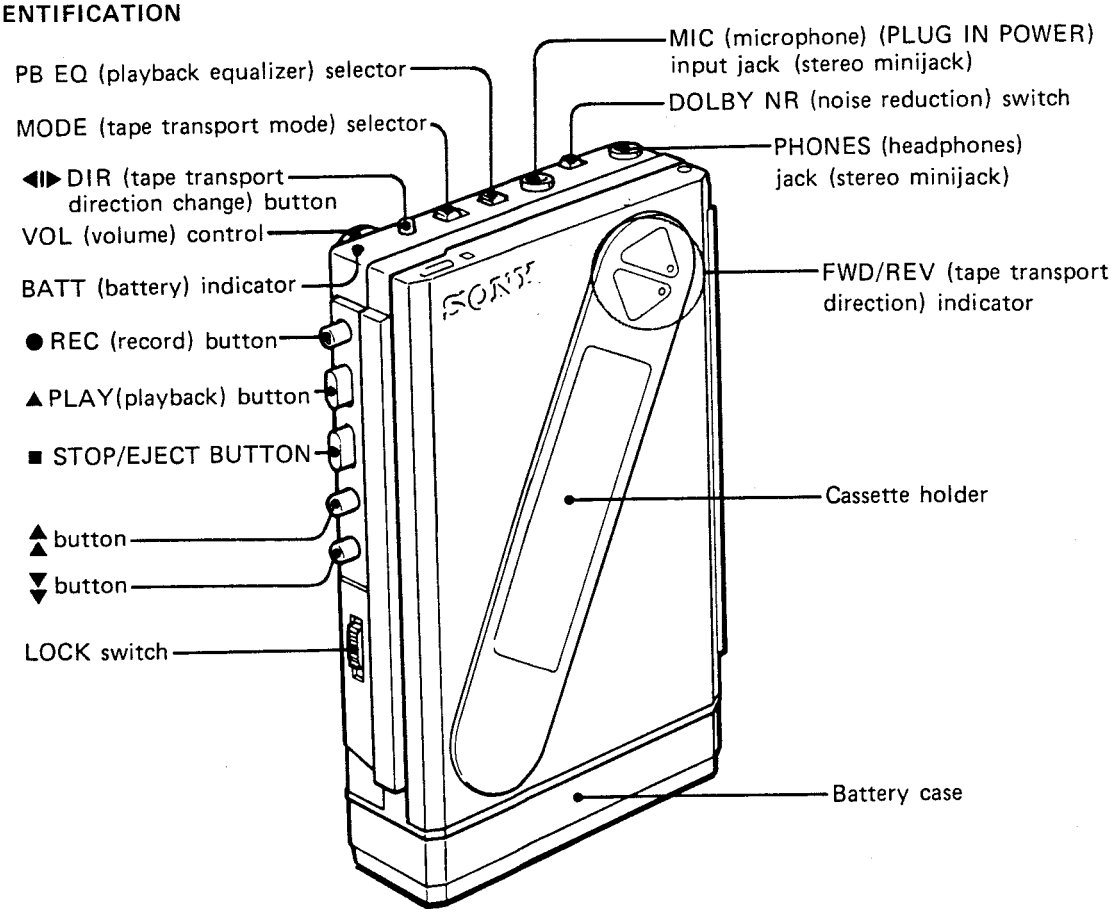
Flexible Circuit Board Repairing

1. Keep the temperature of the soldering iron at 270° ± 10° C during repairing.
2. Do not touch the soldering iron more than 4 seconds or 3 times on the same conductor of the circuit board.
3. Do not apply force on the conductor when soldering or unsoldering.

Tip of soldering iron



PARTS IDENTIFICATION



Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

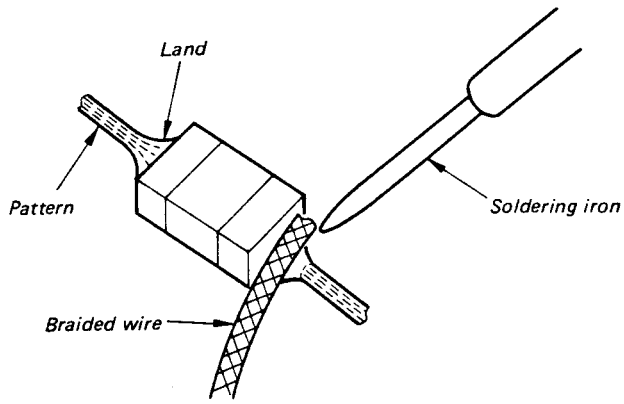
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ Removing chip components

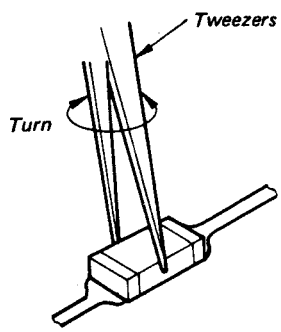
(1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.
Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

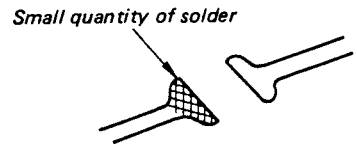
After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

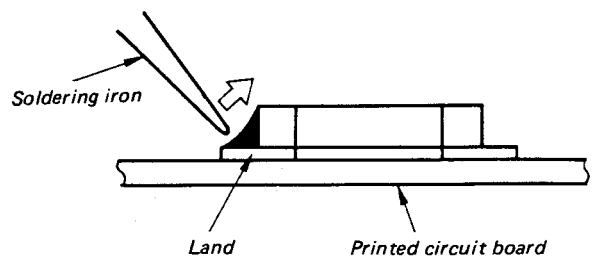
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

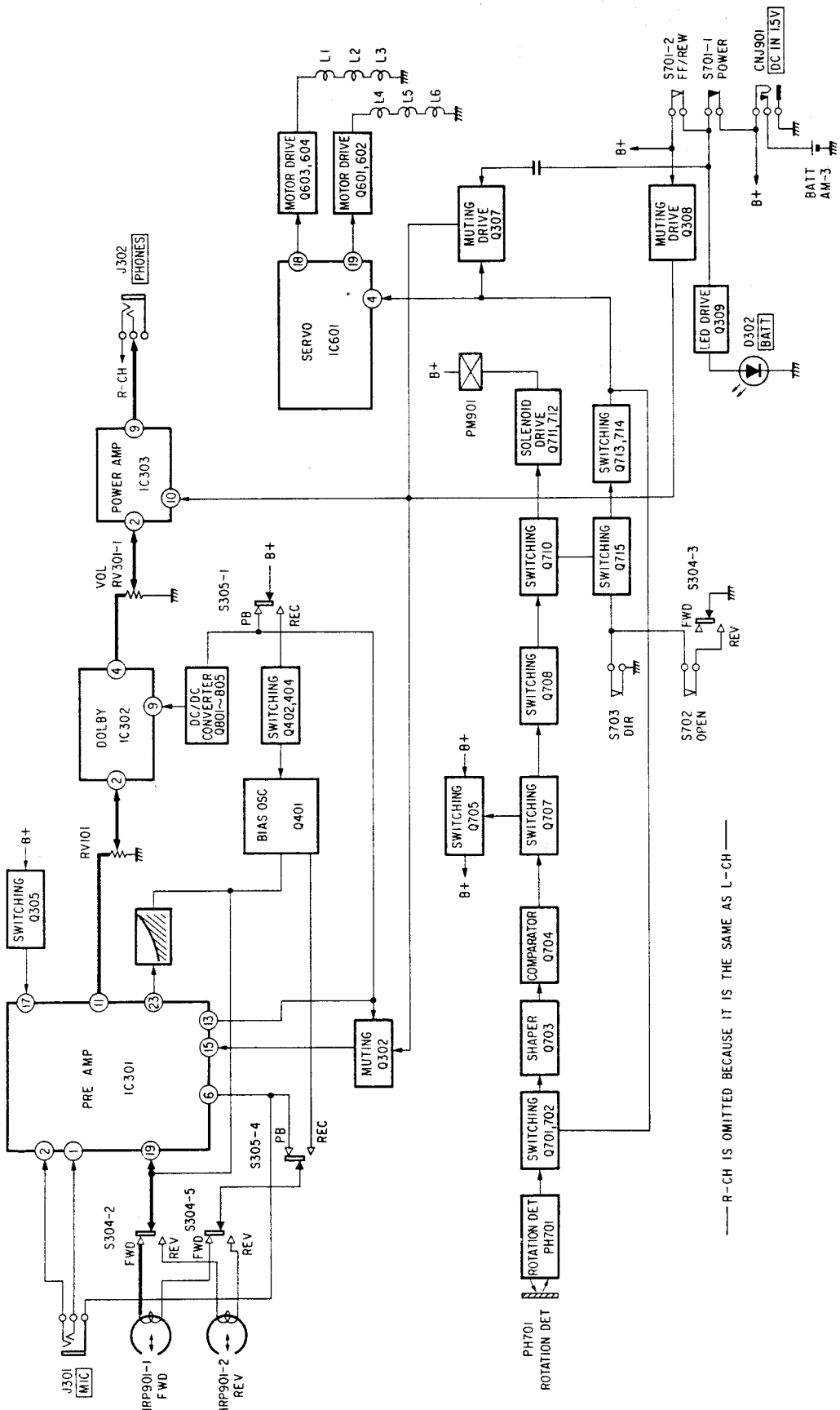
Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

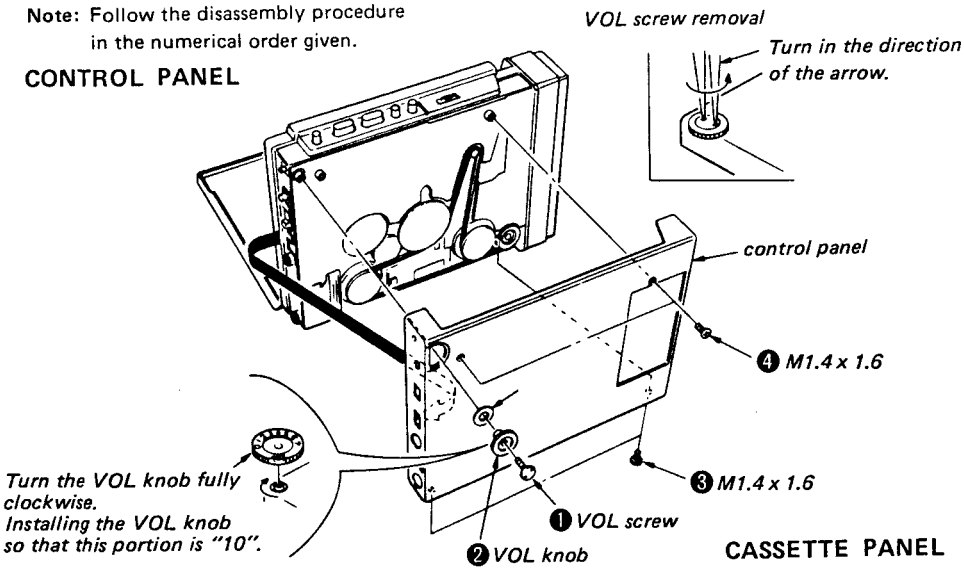
SECTION 1
BLOCK DIAGRAM



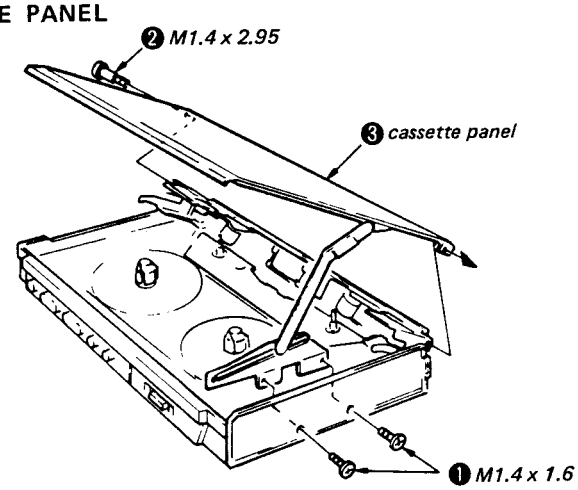
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

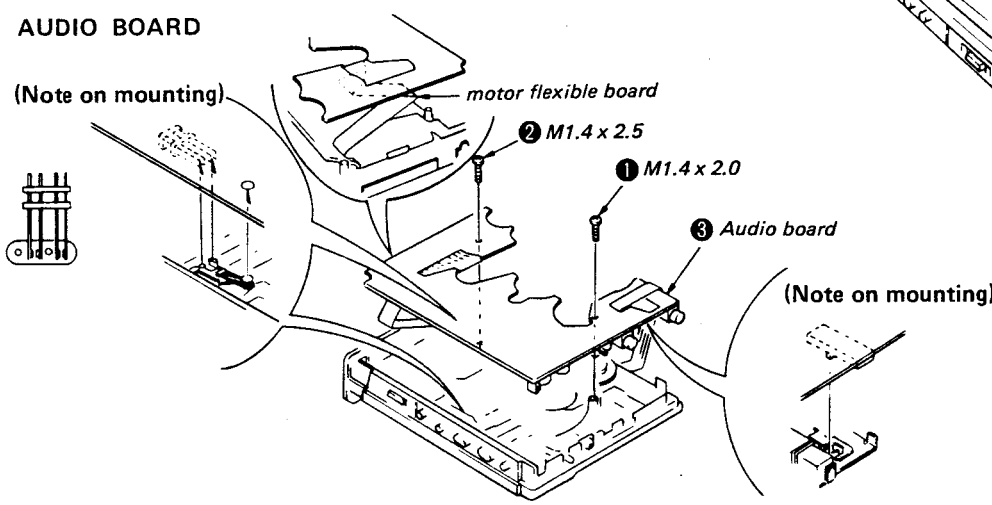
CONTROL PANEL


VOL screw removal
Turn in the direction of the arrow.
control panel
❹ M1.4 x 1.6
❸ M1.4 x 1.6
❶ VOL screw
❷ VOL knob
Turn the VOL knob fully clockwise.
Installing the VOL knob so that this portion is "10".

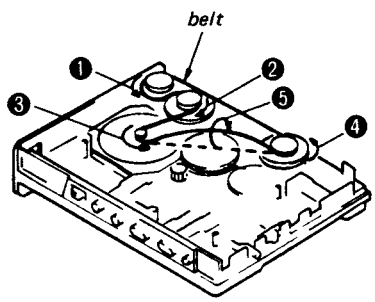
CASSETTE PANEL



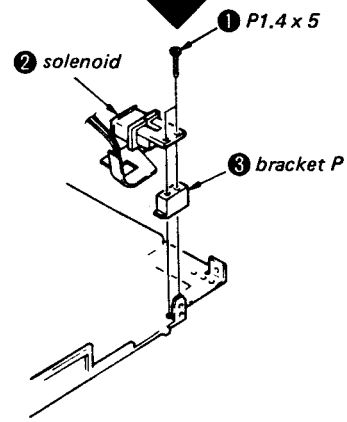
AUDIO BOARD



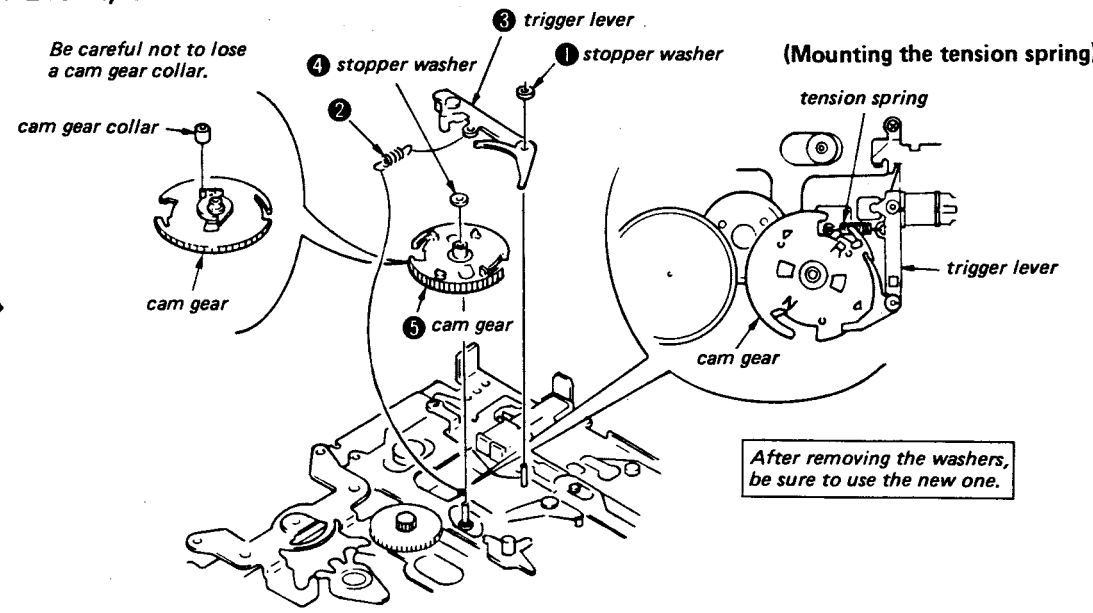
INSTALLING THE BELT



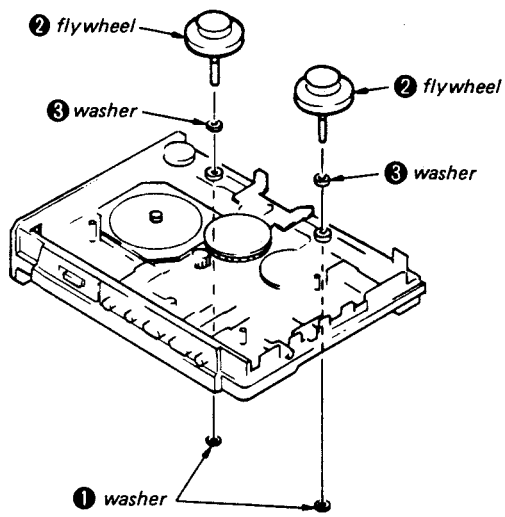
SOLENOID PLUNGER (PM901)



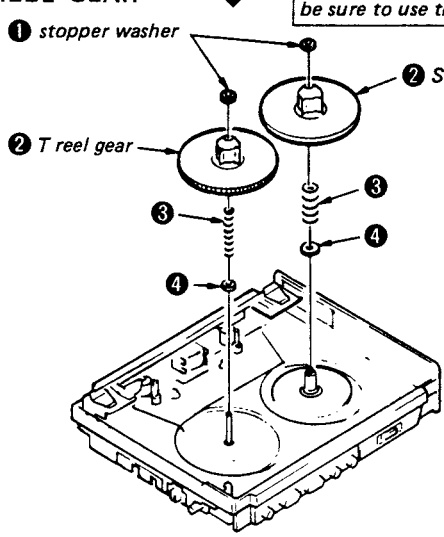
TRIGGER LEVER, CAM GEAR



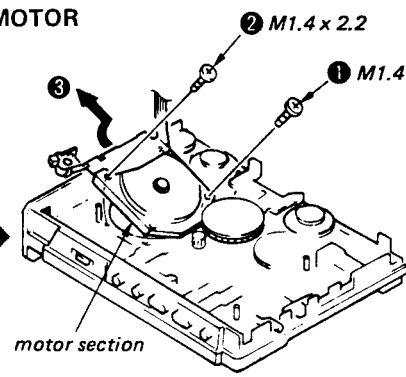
FLYWHEEL



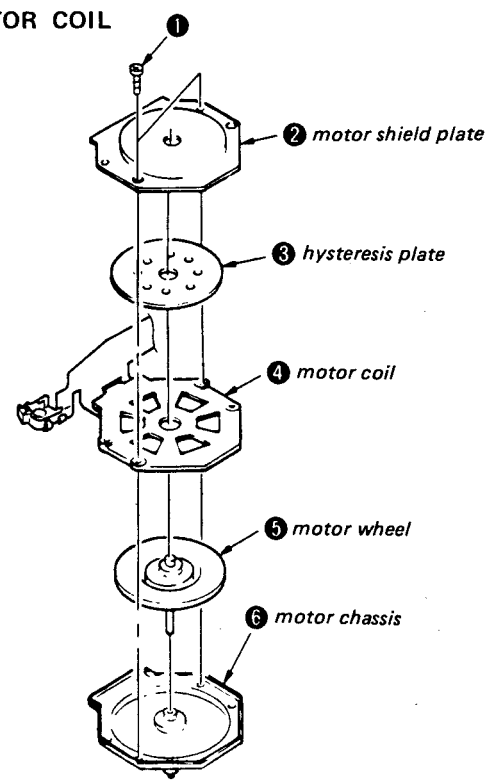
REEL GEAR



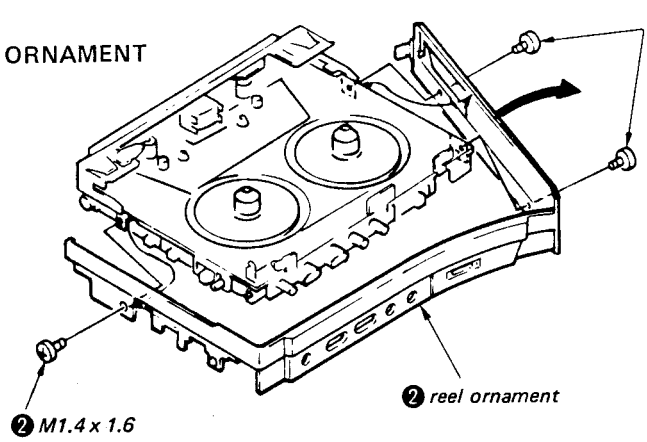
MOTOR



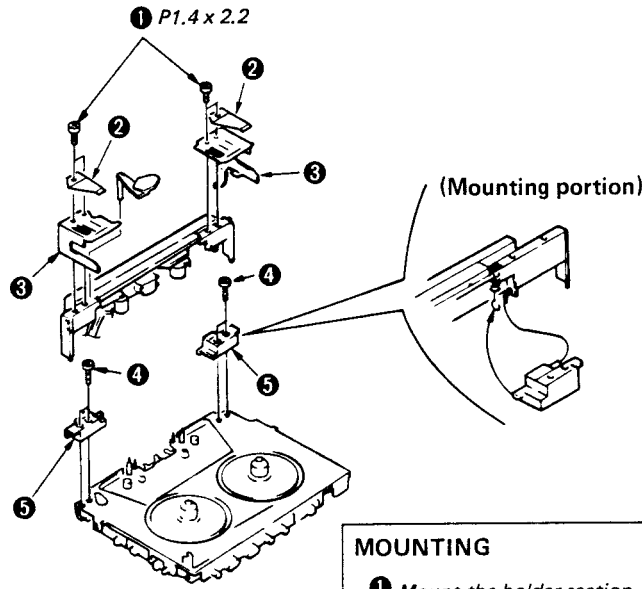
MOTOR COIL



REEL ORNAMENT

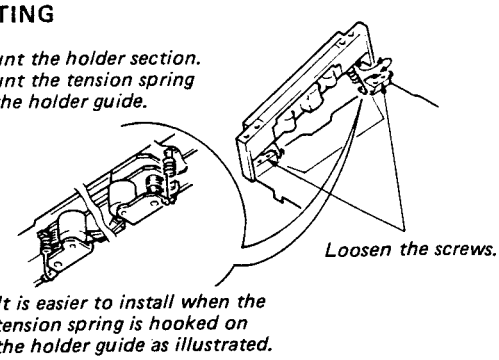


HOLDER



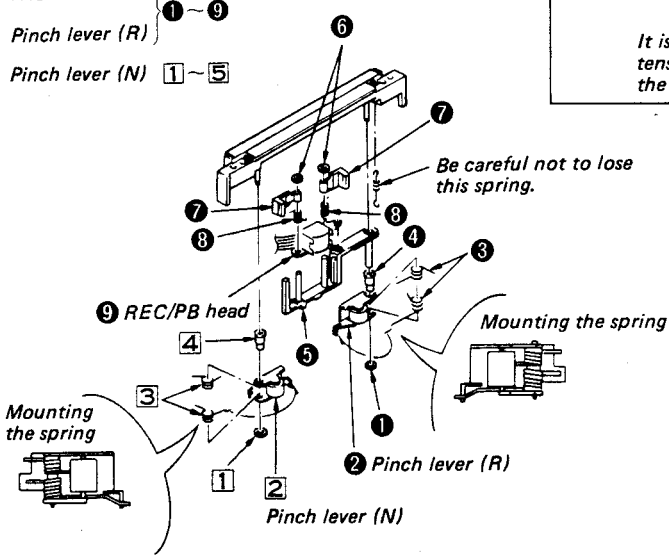
MOUNTING

❶ Mount the holder section.
❷ Mount the tension spring on the holder guide.



HEAD, PINCH ROLLER

Head
Pinch lever (R) ❶~❾
Pinch lever (N) [1]~[5]



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL MEASUREMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Perform with 1.3V DC power.

	Torque meter	meter
FWD	CQ-102RC	20 – 38 g·cm (0.28 – 0.52 oz·inch)
FF, REW	CQ-201B	more than 70 g·cm (more than 0.97 oz·inch)
Back Tension (FWD, REV)	CQ-102C	less than 1.5 – 3 g·cm (less than 0.02 – 0.04 oz·inch)
Tape pulling force (FWD)	CQ-403A	more than 60 g (more than 2.1 oz)
REV	CQ-102RC	25 – 38 g·cm (0.35 – 0.52 oz·inch)
Tape pulling force (REV)	CQ-403R	more than 60 g (more than 21 oz)

ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

- **Standard Record:**

Standard Input Level

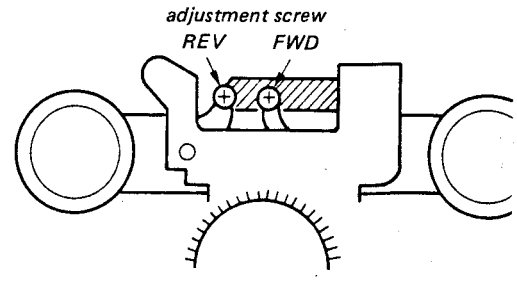
INPUT	MIC
source impedance	300Ω
input level	0.77mV (-60 dB)

Standard output Level

OUTPUT	HEADPHONES
load impedance	18Ω
output level	*0.0775V (-20 dB)

*Adjust by volume control.

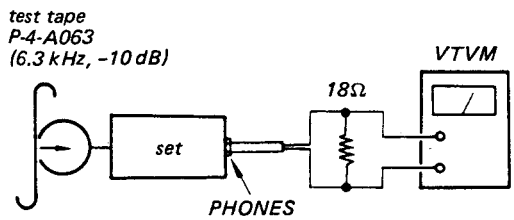
Adjustment Location:



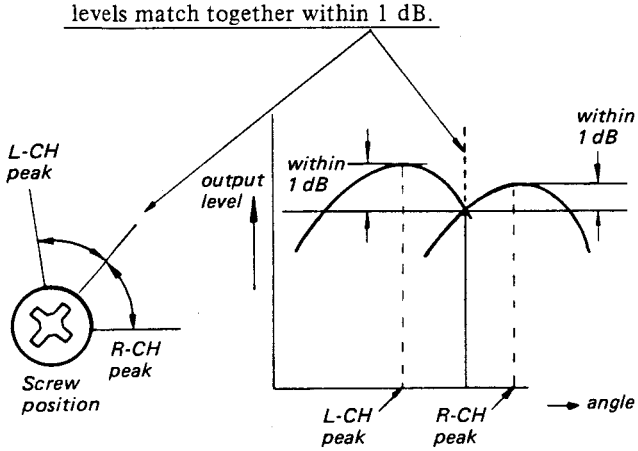
Record/playback Head Azimuth Adjustment

Procedure:

1. Mode: playback FWD, REV mode

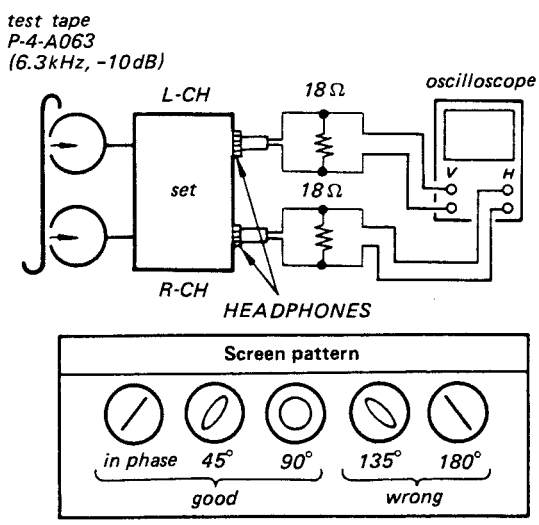


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



Note) After the adjustments, apply locking compound to the screw.

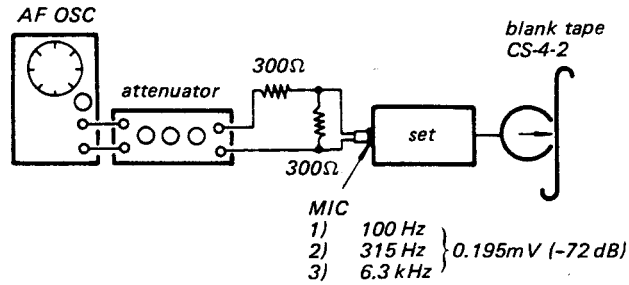
3. Phase Check
Mode: playback



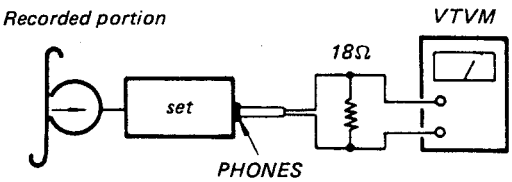
Record Bias Adjustment

Procedure:

1. RECORD mode

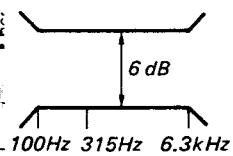


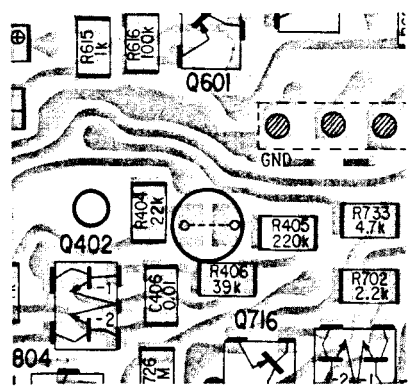
2. PLAYBACK mode



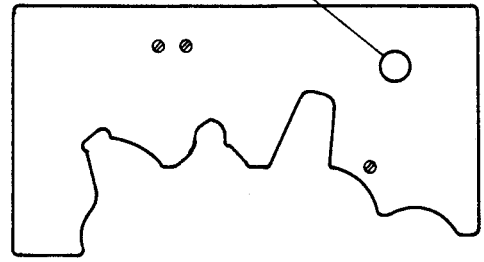
1) Adjust VOLUME control so that 315 Hz output becomes 24.5 mV (-30 dB).
2) Make sure that 100 Hz and 6.3 kHz values are within the specifications relative to 315 Hz.
3) If not, switch the tap and step 1 and2. (When the pattern is bridged, 6.3 kHz output decreases.)

Specification:





[AU BOARD]



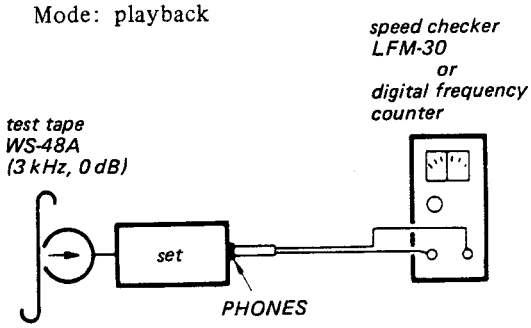
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

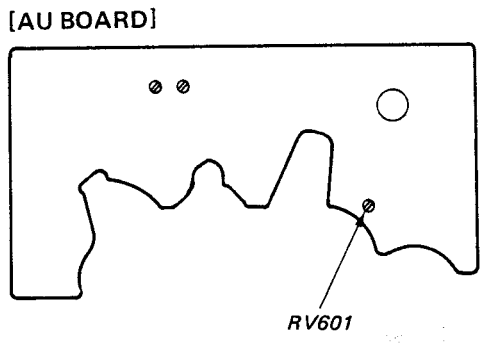
Mode: playback



Specification:

Speed checker	Digital frequency counter
±1%	2,970 – 3,030 Hz

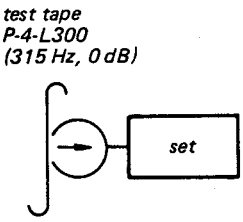
Adjustment Location: RV601



Dolby NR Level Adjustment

Setting:

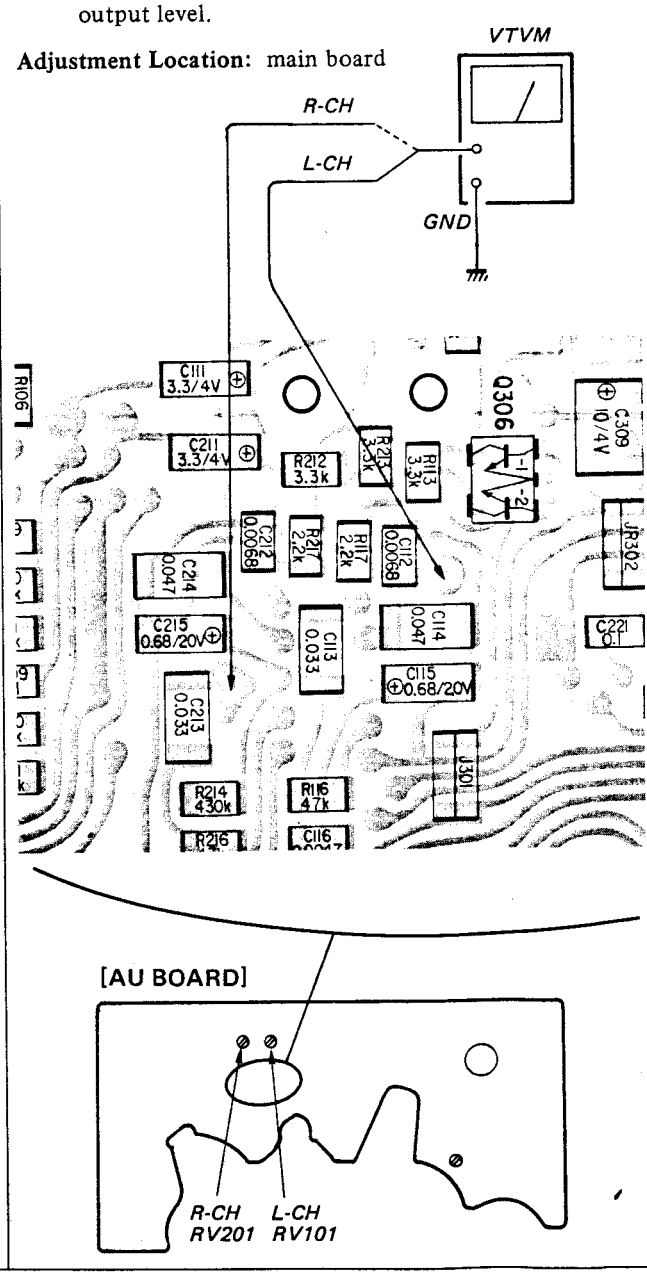
TAPE switch: NORM
DOLBY NR switch: off



Procedure:

Adjust RV101 (L-CH), RV201 (R-CH) to obtain -20.5 dB ±1 dB (0.082V to 0.065V) output level.

Adjustment Location: main board

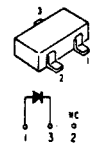


• Semiconductors Location

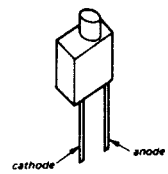
Ref. No.	Location	Ref. No.	Location
D301	D-3	Q604	B-4
D302	J-15	Q701	E-4
D401	J-2	Q702	F-4
D801	D-2	Q703	C-5
		Q704	C-6
IC301	H-14	Q705	D-3
IC302	G-13	Q706	C-4
IC303	F-14	Q707	C-6
IC601	B-14	Q708	C-6
		Q710	B-5
PH701	G-5	Q711	A-5
		Q712	A-4
Q302	H-13	Q713	A-6
Q305	E-2	Q714	A-7
Q306	F-3	Q715	A-10
Q307	E-3	Q716	C-3
Q308	E-3	Q717	C-3
Q309	D-3	Q718	E-4
Q401	J-2	Q801	D-15
Q402	C-2	Q802	D-15
Q404	C-2	Q803	D-15
Q601	B-3	Q804	C-2
Q602	B-2	Q805	C-2
Q603	B-3		

• Semiconductor Lead Layouts

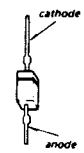
DA106K



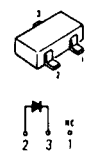
GL2PR9



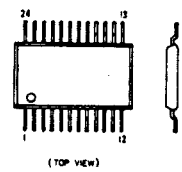
1SS283



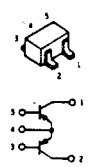
RD3, 9M-B1



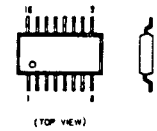
CXA1010M



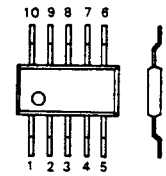
FMS1
FMA4



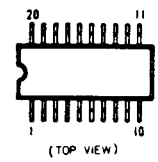
NJM2063AM



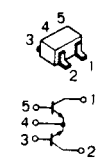
LA4535M



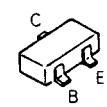
CX20123



FMW1
FMG4



DTA114YK
2SA812
DTC114TK
2SD596
2SB624-BV4
2SC1623

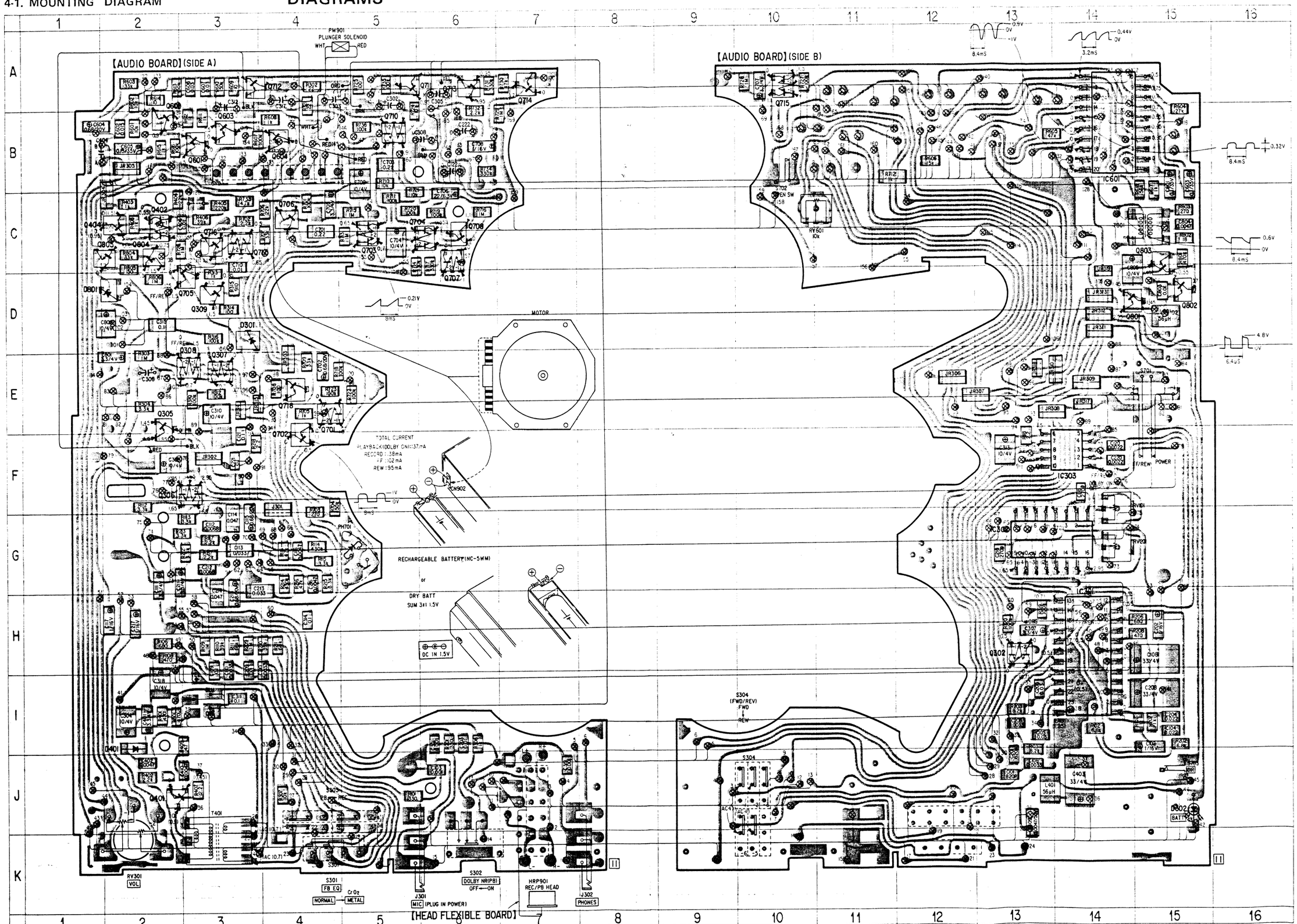


Note:

- ⊗ : Through hole.
- ⊗—⊗ : Component-side p

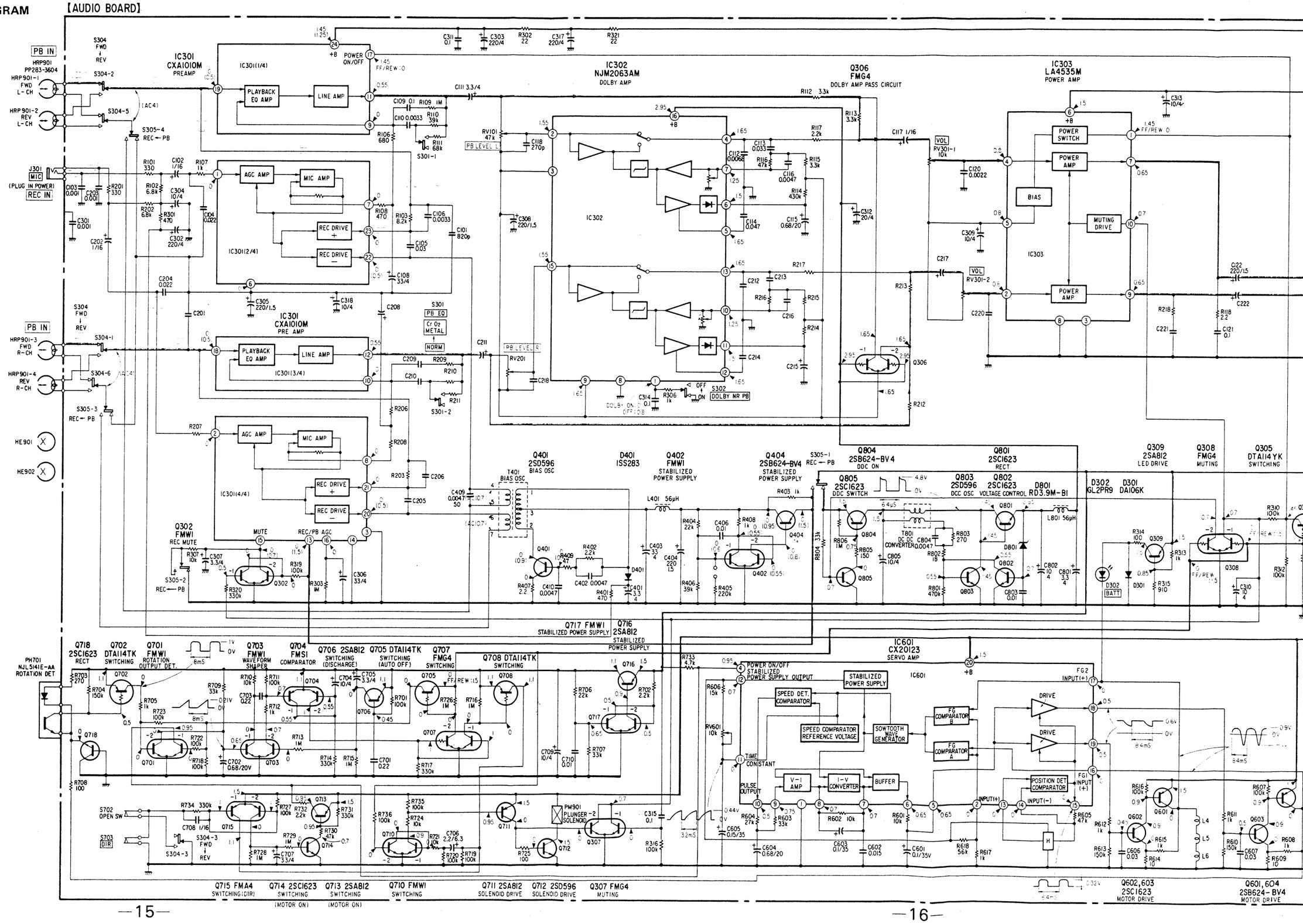
SECTION 4
DIAGRAMS

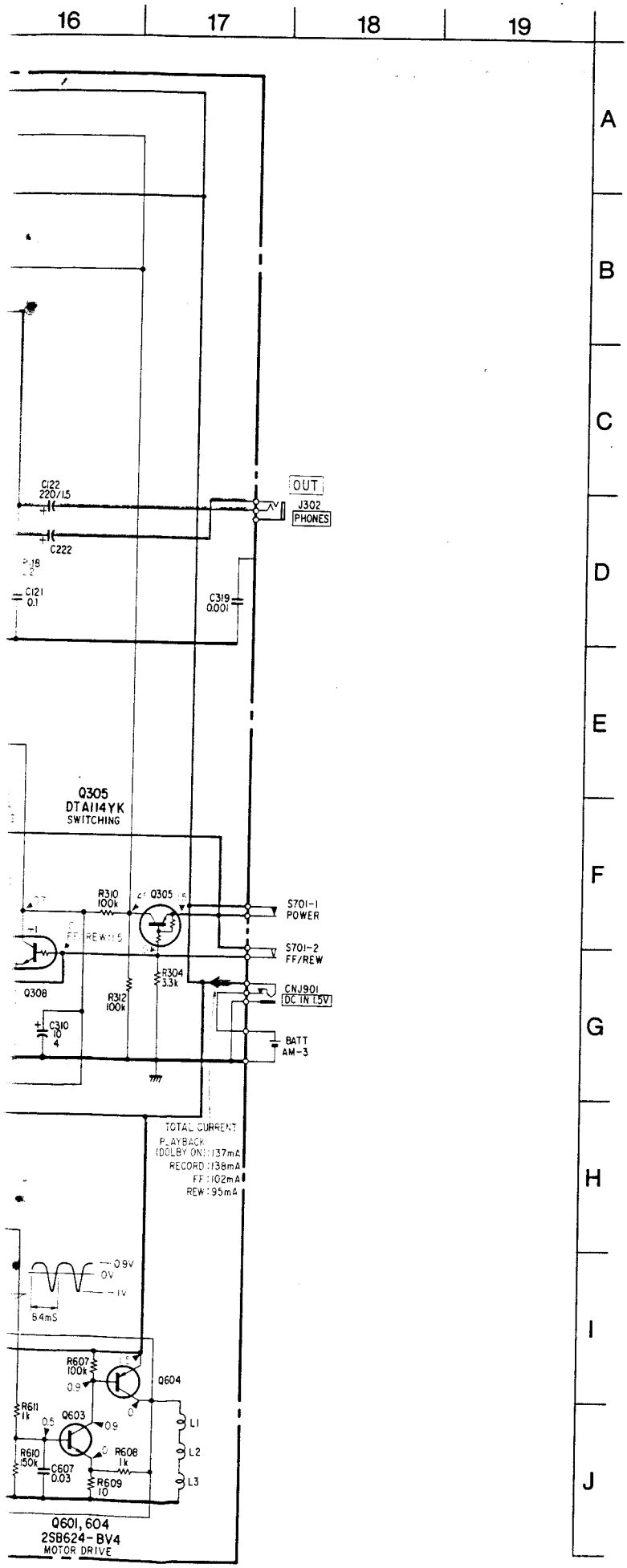
4-1. MOUNTING DIAGRAM



pattern.

4-2. SCHEMATIC DIAGRAM 【AUDIO BOARD】





Note:

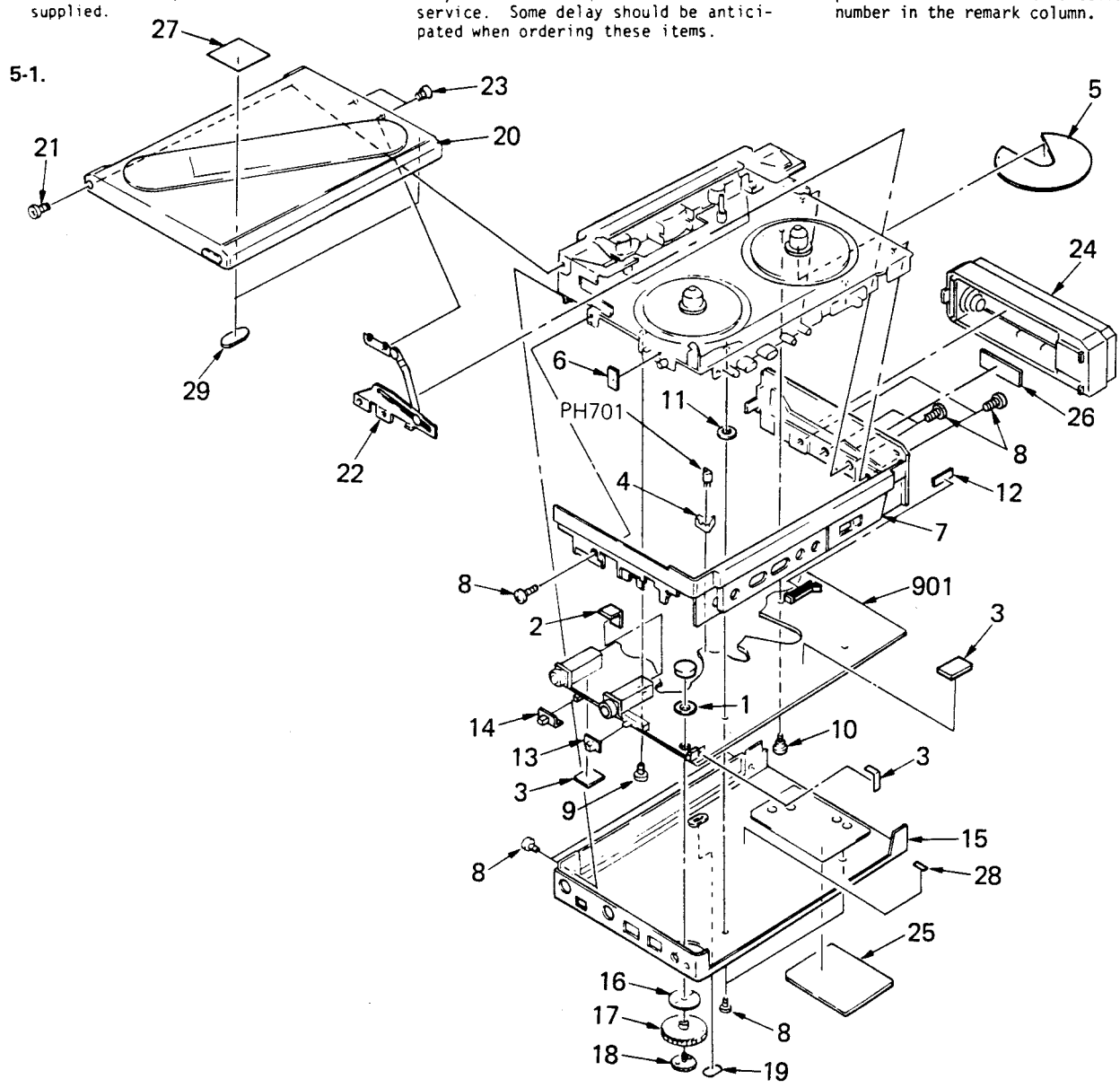
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ⟶ : Playback signal path.
- ⟹ : Record signal path.
- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- ▬ : B+ bus.
- ▭ : adjustment for repair.
- AC voltage readings in the bias oscillator with a VTVM.
- Total current is measured with no cassette installed.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with VOM (50kΩ/V).
  no mark : playback
  ( ) : Record
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in no-signal mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Switches

Ref. No.	Switch	Position
S301	PB EQ	NORM
S302	DOLBY NR	OFF
S304	FWD/REV	FWD
S305	REC/PB	PB
S701	POWER, FF/REW	OFF
S702	OPEN SW	OFF
S703	DIR	OFF

SECTION 5
EXPLODED VIEWS AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

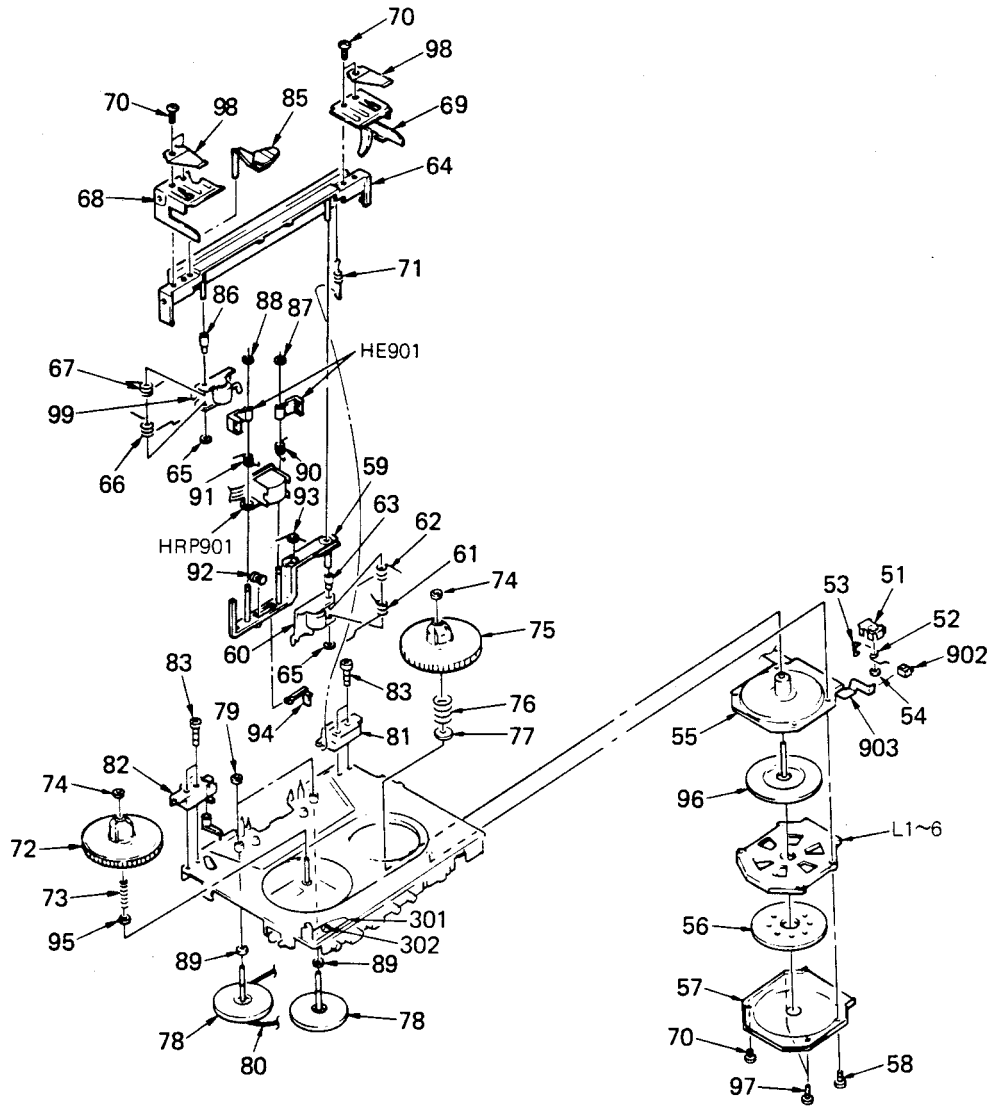
5-1.



No.	Part No.	Description	Remarks
1	3-330-442-01	SHEET, ADHESIVE, VOL	
2	3-703-929-01	SHEET, M.J	
3	3-831-441-XX	SPACER	
4	3-329-761-01	ADJUSTOR, REFLECTOR	
5	3-333-163-01	SHEET,INSULATING, SHIELD PLATE	
7	3-335-922-01	ORNAMENT, REEL	
8	3-703-816-31	SCREW (M1.4X1.6), SPECIAL HEAD	
9	3-703-816-02	SCREW (M1.4X2.0), SPECIAL HEAD	
10	3-333-181-01	SCREW (M1.4), PRECISION STEP	
11	3-701-437-11	WASHER	
12	*3-317-714-01	BRACKET, SWITCH	
13	3-333-140-01	KNOB, TAPE SW	
14	3-333-141-01	KNOB, DOLBY SW	
15	3-335-920-01	(BLACK)....PANEL, CONTROL	
	3-335-920-11	(SILVER)...PANEL, CONTROL	

No.	Part No.	Description	Remarks
16	3-315-467-00	WASHER, CONTROL	
17	3-333-142-01	KNOB, VOL	
18	3-333-145-01	SCREW, VOL	
19	3-333-162-01	(SILVER)...SHEET, AZIMUTH HOLE	
	3-333-162-11	(BLACK)....SHEET, AZIMUTH HOLE	
20	X-3329-715-1	(BLACK)....PANEL ASSY (B), CASSETTE	
	X-3329-716-1	(SILVER)...PANEL ASSY (S), CASSETTE	
21	3-329-766-01	SCREW (M1.4X2.95),STEP	
22	X-3329-684-1	BRACKET ASSY, ARM	
23	7-627-451-07	SCREW, PRECISION +K 1.4X1.6	
24	X-3329-648-1	CASE (B) ASSY, BATTERY	
25	3-331-025-01	(SILVER)...LABEL, MODEL NUMBER	
	3-331-025-11	(BLACK)....LABEL, MODEL NUMBER	
26	3-527-213-00	LABEL, SERIAL NUMBER	
27	3-703-710-01	STICKER, SONY SYMBOL (12)	
28	3-327-119-01	SHEET, AZIMUTH	
29	3-323-130-01	CUSHION, CASSETTE	

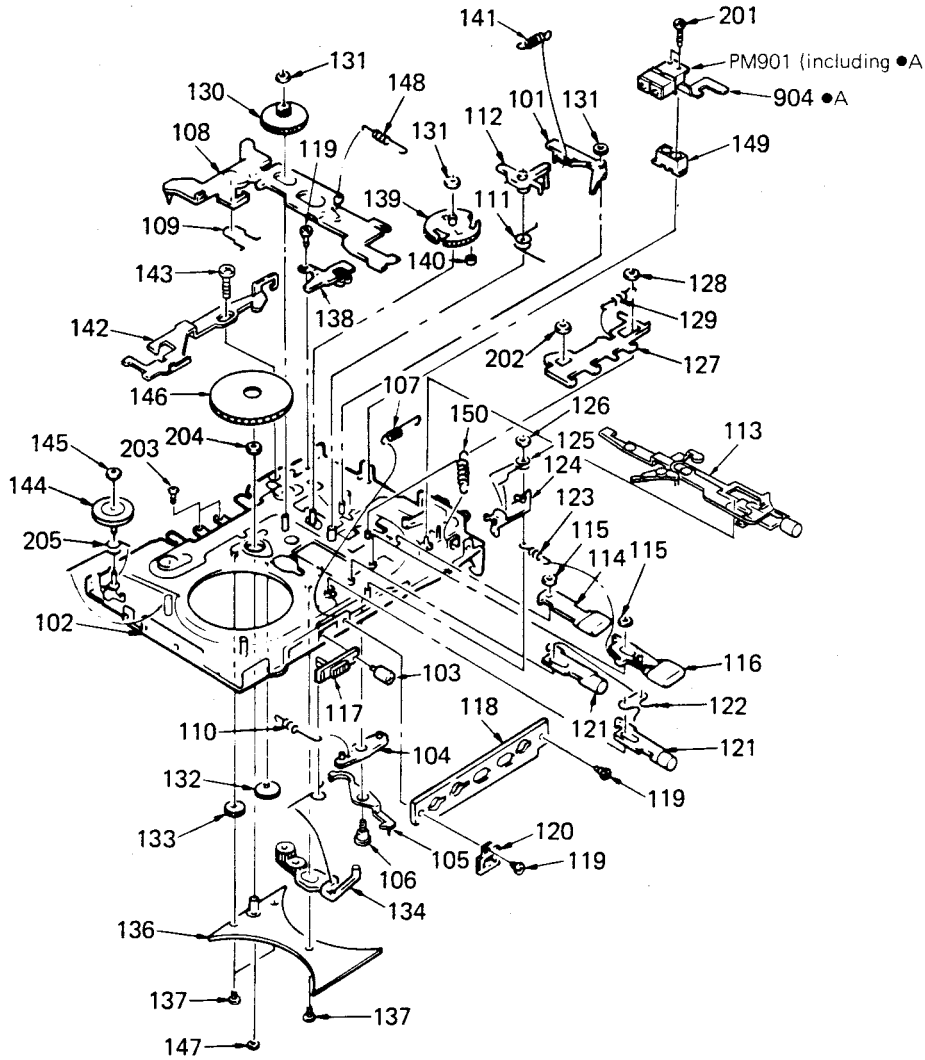
5-2.



No.	Part No.	Description	Remarks
51	X-3329-717-1	BRACKET ASSY, CONTACT	
52	3-335-916-01	SPRING	
53	3-335-913-01	SPRING	
54	3-578-224-00	WASHER	
55	X-3329-625-1	CHASSIS ASSY, MOTOR	
56	3-333-173-01	PLATE (S), HYSTERESIS	
57	*3-333-126-01	PLATE (R), SHIELD, MOTOR	
58	3-703-816-91	SCREW (M1.4X2.8), SPECIAL HEAD	
59	X-3329-683-1	LEVER ASSY, HEAD	
60	X-3329-697-1	PINCH LEVER (R) ASSY	
61	3-329-641-01	SPRING (R)	
62	3-329-643-01	SPRING (R)	
63	3-331-027-01	COLLAR (R), PINCH LEVER	
64	X-3329-719-1	HOLDER (D) ASSY	
65	3-331-036-11	WASHER	
66	3-329-640-01	SPRING (N)	
67	3-329-642-01	SPRING (N)	
	3-329-642-11	SPRING (N)	
	3-329-642-21	SPRING (N), PINCH LEVER	
68	3-329-714-01	HOLDER (RIGHT), CASSETTE	
69	3-329-713-01	HOLDER (LEFT), CASSETTE	
70	3-703-816-62	SCREW (M1.4X2.2), SPECIAL HEAD	
71	3-331-012-01	SPRING (HOLDER), TENSION	
72	X-3329-705-1	GEAR (R) ASSY, T REEL	
73	3-331-013-01	SPRING, COMPRESSION	
74	3-315-384-11	WASHER, STOPPER	
75	3-329-729-01	GEAR, SUPPLY REEL	
76	3-331-014-01	SPRING, COMPRESSION	

No.	Part No.	Description	Remarks
77	3-320-354-01	WASHER	
78	X-3329-707-1	FLYWHEEL (R) ASSY	
79	3-331-007-01	WASHER	
80	3-329-695-01	BELT	
81	3-329-737-01	GUIDE (LEFT), HOLDER	
82	3-329-736-01	GUIDE (RIGHT), HOLDER	
83	7-627-552-48	SCREW, PRECISION +P 1.7X4	
84	3-329-690-01	GUIDE, MARKER	
85	3-329-717-01	LEVER, INDICATION, DIRECTION	
86	3-329-637-01	COLLAR, PINCH LEVER	
87	3-335-902-01	WASHER	
88	3-335-902-11	WASHER	
89	3-321-394-21	WASHER	
90	3-333-105-01	SPRING (B)	
91	3-333-104-01	SPRING (A)	
92	3-333-102-11	SHAFT, AZIMUTH	
93	3-333-106-01	SPRING	
94	3-333-101-01	LEVER, AZIMUTH	
95	3-315-415-21	WASHER (1.5-2.3)	
96	A-3133-236-A	WHEEL BLOCK ASSY, MOTOR	
97	3-703-816-92	SCREW (M1.4X2.8), SPECIAL HEAD	
98	*3-331-087-01	SPRING	
99	X-3329-698-1	PINCH LEVER (N) ASSY	
301	3-329-706-04	LEVER (B), PANEL LOCK	
302	3-333-124-01	SCREW (M1.4), STEP, PRECISION	
902	1-506-905-11	CONNECTOR	
903	1-618-639-11	PC BOARD, MOTOR CONNECTION	
HE901	A-3164-345-A	LEVER BLOCK ASSY, ERASE	

5-3.



No.	Part No.	Description	Remarks
101	X-3329-615-1	LEVER ASSY, TRIGGER	
102	X-3329-629-1	CHASSIS COMPLETE (R) ASSY	
103	3-329-697-01	SCREW, STEP, PRECISION	
104	X-3329-617-1	LEVER (B) ASSY, DRIVING	
105	3-329-684-01	LEVER (A), SELECT	
106	3-331-056-01	SHAFT, DRIVING LEVER (B)	
107	3-335-931-01	SPRING (SELECT LEVER), TENSION	
108	X-3329-699-1	LEVER (AD) ASSY, DRIVING	
109	3-329-698-01	SPRING (B)	
110	3-331-018-01	SPRING, TENSION	
111	3-329-700-01	SPRING	
112	3-329-733-01	LEVER (A), SHUT-OFF	
113	X-3329-627-1	LEVER (A) ASSY, REC	
114	X-3329-620-1	LEVER ASSY, PLAY	
115	3-578-242-21	WASHER	
116	X-3329-636-1	LEVER ASSY, STOP	
117	3-333-115-01	KNOB, SAFETY LOCK	
118	*3-329-734-01	HOLDER, BUTTON	
119	3-703-816-32	SCREW (M1.4X1.6), SPECIAL HEAD	
120	3-331-043-01	SPRING	
121	X-3329-621-1	LEVER (A) ASSY, F.R	
122	3-331-016-01	SPRING	
123	3-331-010-01	SPRING (STOP LEVER), TENSION	
124	3-329-692-05	LEVER, SW	
125	3-329-702-01	SPRING	
126	3-331-036-11	WASHER	
127	3-329-731-01	LEVER, LOCK	
128	3-578-224-00	WASHER	

No.	Part No.	Description	Remarks
129	3-331-009-01	SPRING (LOCK LEVER), TENSION	
130	3-329-687-01	GEAR, DRIVING	
131	3-315-384-11	WASHER, STOPPER	
132	3-329-688-01	GEAR (A), T	
133	3-329-689-01	GEAR (B), T	
134	X-3329-626-1	LEVER (B) ASSY, F.R	
135	3-329-699-01	SPRING	
136	X-3329-618-1	COVER ASSY, REEL	
137	3-331-047-01	SCREW (M1.4X1.4),SPECIAL HEAD	
138	3-329-685-01	SPRING (A)	
139	3-329-730-01	GEAR, CAM	
140	3-329-693-01	COLLAR, CAM GEAR	
141	3-331-011-01	SPRING (TRIGGER LEVER),TENSION	
142	X-3329-682-1	LEVER (A) ASSY, ERASE	
143	3-329-696-01	SCREW, ERASE LEVER	
144	3-329-686-01	WHEEL, REVERSE	
145	3-331-036-01	WASHER	
146	X-3329-628-1	PULLEY COMPLETE ASSY, MIDWAY	
147	3-331-007-01	WASHER	
149	*3-331-041-01	BRACKET, P	
150	3-333-157-01	SPRING, TENSION (PANEL ROCK LEVER (B))	
201	7-627-551-37	SCREW, PRECISION +P 1.4X5	
202	3-311-815-21	WASHER, POLYETHYLENE	
203	3-331-097-01	SCREW, AZIMUTH	
204	3-521-394-21	WASHER	
205	3-341-440-01	SPRING, HOLDER LOCK	
904	1-618-641-11	PC BOARD, MP FLEXIBLE	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC,
UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
901	A-3070-174-A	PC BOARD ASSY, AU		
902	1-506-905-11	CONNECTOR		
903	1-618-639-11	PC BOARD, MOTOR CONNECTION		
904	1-618-641-11	PC BOARD, MP FLEXIBLE		
C101	1-163-139-00	CERAMIC CHIP 820PF	10%	50V
C102	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C103	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C104	1-163-033-00	CERAMIC CHIP 0.022MF	10%	25V
C105	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C106	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C108	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C109	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C110	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C111	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C112	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C113	1-163-074-00	CERAMIC CHIP 0.033MF	5%	25V
C114	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V
C115	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C116	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C117	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C118	1-163-127-00	CERAMIC CHIP 270PF	10%	50V
C120	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C121	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C122	1-124-947-11	ELECT 220MF	20%	1.5V
C201	1-163-139-00	CERAMIC CHIP 820PF	10%	50V
C202	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C203	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C204	1-163-033-00	CERAMIC CHIP 0.022MF	10%	25V
C205	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C206	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C208	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C209	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C210	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C211	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C212	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C213	1-163-074-00	CERAMIC CHIP 0.033MF	5%	25V
C214	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V
C215	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C216	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C217	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C218	1-163-127-00	CERAMIC CHIP 270PF	10%	50V
C220	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C221	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C222	1-124-947-11	ELECT 220MF	20%	1.5V
C301	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C302	1-124-434-00	ELECT 220MF	20%	4V

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
C303	1-124-434-00	ELECT 220MF	20%	4V
C304	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C305	1-124-947-11	ELECT 220MF	20%	1.5V
C306	1-124-431-00	ELECT 33MF	20%	4V
C307	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C308	1-124-947-11	ELECT 220MF	20%	1.5V
C309	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C310	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C311	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C312	1-124-434-00	ELECT 220MF	20%	4V
C313	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C314	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C315	1-163-077-00	CERAMIC CHIP 0.1MF		50V
C317	1-124-434-00	ELECT 220MF	20%	4V
C318	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C319	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C401	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C402	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C403	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C404	1-124-947-11	ELECT 220MF	20%	1.5V
C406	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C409	1-162-625-11	CERAMIC CHIP 0.0047MF	5%	50V
C410	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C601	1-135-070-00	TANTAL. CHIP 0.1MF	10%	35V
C602	1-163-023-00	CERAMIC CHIP 0.015MF	10%	50V
C603	1-135-070-00	TANTAL. CHIP 0.1MF	10%	35V
C604	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C605	1-135-071-21	TANTAL. CHIP 0.15MF	10%	35V
C606	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C607	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C701	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C702	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C703	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C704	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C705	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C706	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C707	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C708	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C709	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C710	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C801	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C802	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C803	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C804	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C805	1-135-104-00	TANTAL. CHIP 10MF	20%	4V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D301	8-719-908-30	DIODE DA106K
D302	1-807-305-11	DIODE GL2PR9 (LED)
D401	8-719-118-21	DIODE 1SS283
D801	8-719-105-57	DIODE RD3.9M-B1
HE901	A-3164-345-A	LEVER BLOCK ASSY, ERASE
HRP901	1-543-308-11	HEAD, MAGNETIC
IC301	8-752-030-34	IC CXA1010M
IC302	8-759-701-07	IC NJM2063AM
IC303	8-759-802-80	IC LA4535M
IC601	8-752-012-32	IC CX20123
J301	1-562-975-21	JACK
J302	1-562-975-11	JACK
JR301	1-216-296-00	METAL CHIP 0 5% 1/8W
JR302	1-216-296-00	METAL CHIP 0 5% 1/8W
JR303	1-216-296-00	METAL CHIP 0 5% 1/8W
JR304	1-216-296-00	METAL CHIP 0 5% 1/8W
JR305	1-216-296-00	METAL CHIP 0 5% 1/8W
JR306	1-216-296-00	METAL CHIP 0 5% 1/8W
JR307	1-216-296-00	METAL CHIP 0 5% 1/8W
JR308	1-216-296-00	METAL CHIP 0 5% 1/8W
JR309	1-216-296-00	METAL CHIP 0 5% 1/8W
JR310	1-216-296-00	METAL CHIP 0 5% 1/8W
JR311	1-216-296-00	METAL CHIP 0 5% 1/8W
JR313	1-216-296-00	METAL CHIP 0 5% 1/8W
JR314	1-216-295-00	METAL CHIP 0 5% 1/10W
JR315	1-216-295-00	METAL CHIP 0 5% 1/10W
JR317	1-216-295-00	METAL CHIP 0 5% 1/10W
JR318	1-216-295-00	METAL CHIP 0 5% 1/10W
JR319	1-216-295-00	METAL CHIP 0 5% 1/10W
L1	1-462-230-11	COIL, MOTOR (STATOR)
L2	1-462-230-11	COIL, MOTOR (STATOR)
L3	1-462-230-11	COIL, MOTOR (STATOR)
L4	1-462-230-11	COIL, MOTOR (STATOR)
L5	1-462-230-11	COIL, MOTOR (STATOR)
L6	1-462-230-11	COIL, MOTOR (STATOR)
L401	1-410-213-51	INDUCTOR CHIP 56UH
L801	1-410-213-51	INDUCTOR CHIP 56UH
PH701	8-719-751-42	DIODE NJL5141E-AA
PM901	1-454-406-11	SOLENOID, PLUNGER
Q302	8-729-903-10	TRANSISTOR FMW1
Q305	8-729-901-46	TRANSISTOR DTA114YK
Q306	8-729-902-93	TRANSISTOR FMG4
Q307	8-729-902-93	TRANSISTOR FMG4
Q308	8-729-902-93	TRANSISTOR FMG4
Q309	8-729-100-76	TRANSISTOR 2SA812
Q401	8-729-159-64	TRANSISTOR 2SD596
Q402	8-729-903-10	TRANSISTOR FMW1
Q404	8-729-162-44	TRANSISTOR 2SB624-BV4
Q601	8-729-162-44	TRANSISTOR 2SB624-BV4
Q602	8-729-100-66	TRANSISTOR 2SC1623
Q603	8-729-100-66	TRANSISTOR 2SC1623
Q604	8-729-162-44	TRANSISTOR 2SB624-BV4
Q701	8-729-903-10	TRANSISTOR FMW1
Q702	8-729-900-51	TRANSISTOR DTA114TK
Q703	8-729-903-10	TRANSISTOR FMW1

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q704	8-729-902-96	TRANSISTOR FMS1
Q705	8-729-900-51	TRANSISTOR DTA114TK
Q706	8-729-100-76	TRANSISTOR 2SA812
Q707	8-729-902-93	TRANSISTOR FMG4
Q708	8-729-900-51	TRANSISTOR DTA114TK
Q710	8-729-903-10	TRANSISTOR FMW1
Q711	8-729-100-76	TRANSISTOR 2SA812
Q712	8-729-159-64	TRANSISTOR 2SD596
Q713	8-729-100-76	TRANSISTOR 2SA812
Q714	8-729-100-66	TRANSISTOR 2SC1623
Q715	8-729-902-90	TRANSISTOR FMA4
Q716	8-729-100-76	TRANSISTOR 2SA812
Q717	8-729-903-10	TRANSISTOR FMW1
Q718	8-729-100-66	TRANSISTOR 2SC1623
Q801	8-729-100-66	TRANSISTOR 2SC1623
Q802	8-729-100-66	TRANSISTOR 2SC1623
Q803	8-729-159-64	TRANSISTOR 2SD596
Q804	8-729-162-44	TRANSISTOR 2SB624-BV4
Q805	8-729-100-66	TRANSISTOR 2SC1623
R101	1-216-037-00	METAL CHIP 330 5% 1/10W
R102	1-216-069-00	METAL CHIP 6.8K 5% 1/10W
R103	1-216-071-00	METAL CHIP 8.2K 5% 1/10W
R106	1-216-045-00	METAL CHIP 680 5% 1/10W
R107	1-216-049-00	METAL CHIP 1K 5% 1/10W
R108	1-216-041-00	METAL CHIP 470 5% 1/10W
R109	1-216-121-00	METAL CHIP 1M 5% 1/10W
R110	1-216-087-00	METAL CHIP 39K 5% 1/10W
R111	1-216-093-00	METAL CHIP 68K 5% 1/10W
R112	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R113	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R114	1-216-112-00	METAL CHIP 430K 5% 1/10W
R115	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R116	1-216-089-00	METAL CHIP 47K 5% 1/10W
R117	1-216-057-00	METAL CHIP 2.2K 5% 1/10W
R118	1-216-298-00	METAL CHIP 2.2 5% 1/10W
R201	1-216-037-00	METAL CHIP 330 5% 1/10W
R202	1-216-069-00	METAL CHIP 6.8K 5% 1/10W
R203	1-216-071-00	METAL CHIP 8.2K 5% 1/10W
R206	1-216-045-00	METAL CHIP 680 5% 1/10W
R207	1-216-049-00	METAL CHIP 1K 5% 1/10W
R208	1-216-041-00	METAL CHIP 470 5% 1/10W
R209	1-216-121-00	METAL CHIP 1M 5% 1/10W
R210	1-216-087-00	METAL CHIP 39K 5% 1/10W
R211	1-216-093-00	METAL CHIP 68K 5% 1/10W
R212	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R213	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R214	1-216-112-00	METAL CHIP 430K 5% 1/10W
R215	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R216	1-216-089-00	METAL CHIP 47K 5% 1/10W
R217	1-216-057-00	METAL CHIP 2.2K 5% 1/10W
R218	1-216-298-00	METAL CHIP 2.2 5% 1/10W
R301	1-216-041-00	METAL CHIP 470 5% 1/10W
R302	1-216-009-00	METAL CHIP 22 5% 1/10W
R303	1-216-121-00	METAL CHIP 1M 5% 1/10W
R304	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R306	1-216-049-00	METAL CHIP 1K 5% 1/10W
R307	1-216-073-00	METAL CHIP 10K 5% 1/10W
R310	1-216-097-00	METAL CHIP 100K 5% 1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R312	1-216-097-00	METAL CHIP	100K	5%	1/10W
R313	1-216-049-00	METAL CHIP	1K	5%	1/10W
R314	1-216-025-00	METAL CHIP	100	5%	1/10W
R315	1-216-048-00	METAL CHIP	910	5%	1/10W
R316	1-216-097-00	METAL CHIP	100K	5%	1/10W
R319	1-216-097-00	METAL CHIP	100K	5%	1/10W
R320	1-216-109-00	METAL CHIP	330K	5%	1/10W
R321	1-216-009-00	METAL CHIP	22	5%	1/10W
R401	1-216-041-00	METAL CHIP	470	5%	1/10W
R402	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R403	1-216-049-00	METAL CHIP	1K	5%	1/10W
R404	1-216-081-00	METAL CHIP	22K	5%	1/10W
R405	1-216-105-00	METAL CHIP	220K	5%	1/10W
R406	1-216-087-00	METAL CHIP	39K	5%	1/10W
R407	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R408	1-216-049-00	METAL CHIP	1K	5%	1/10W
R409	1-216-017-00	METAL CHIP	47	5%	1/10W
R601	1-216-073-00	METAL CHIP	10K	5%	1/10W
R602	1-216-073-00	METAL CHIP	10K	5%	1/10W
R603	1-216-085-00	METAL CHIP	33K	5%	1/10W
R604	1-216-083-00	METAL CHIP	27K	5%	1/10W
R605	1-216-089-00	METAL CHIP	47K	5%	1/10W
R606	1-216-077-00	METAL CHIP	15K	5%	1/10W
R607	1-216-097-00	METAL CHIP	100K	5%	1/10W
R608	1-216-049-00	METAL CHIP	1K	5%	1/10W
R609	1-216-001-00	METAL CHIP	10	5%	1/10W
R610	1-216-101-00	METAL CHIP	150K	5%	1/10W
R611	1-216-049-00	METAL CHIP	1K	5%	1/10W
R612	1-216-049-00	METAL CHIP	1K	5%	1/10W
R613	1-216-101-00	METAL CHIP	150K	5%	1/10W
R614	1-216-001-00	METAL CHIP	10	5%	1/10W
R615	1-216-049-00	METAL CHIP	1K	5%	1/10W
R616	1-216-097-00	METAL CHIP	100K	5%	1/10W
R617	1-216-049-00	METAL CHIP	1K	5%	1/10W
R618	1-216-091-00	METAL CHIP	56K	5%	1/10W
R701	1-216-097-00	METAL CHIP	100K	5%	1/10W
R702	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R703	1-216-035-00	METAL CHIP	270	5%	1/10W
R704	1-216-101-00	METAL CHIP	150K	5%	1/10W
R705	1-216-049-00	METAL CHIP	1K	5%	1/10W
R706	1-216-081-00	METAL CHIP	22K	5%	1/10W
R707	1-216-085-00	METAL CHIP	33K	5%	1/10W
R708	1-216-025-00	METAL CHIP	100	5%	1/10W
R709	1-216-085-00	METAL CHIP	33K	5%	1/10W
R710	1-216-073-00	METAL CHIP	10K	5%	1/10W
R711	1-216-097-00	METAL CHIP	100K	5%	1/10W
R712	1-216-198-00	METAL CHIP	1K	5%	1/8W
R713	1-216-121-00	METAL CHIP	1M	5%	1/10W
R714	1-216-109-00	METAL CHIP	330K	5%	1/10W
R715	1-216-121-00	METAL CHIP	1M	5%	1/10W
R716	1-216-121-00	METAL CHIP	1M	5%	1/10W
R717	1-216-109-00	METAL CHIP	330K	5%	1/10W
R718	1-216-097-00	METAL CHIP	100K	5%	1/10W
R719	1-216-097-00	METAL CHIP	100K	5%	1/10W
R720	1-216-097-00	METAL CHIP	100K	5%	1/10W
R721	1-216-073-00	METAL CHIP	10K	5%	1/10W
R722	1-216-097-00	METAL CHIP	100K	5%	1/10W
R723	1-216-097-00	METAL CHIP	100K	5%	1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R724	1-216-073-00	METAL CHIP	10K	5%	1/10W
R725	1-216-025-00	METAL CHIP	100	5%	1/10W
R726	1-216-121-00	METAL CHIP	1M	5%	1/10W
R727	1-216-097-00	METAL CHIP	100K	5%	1/10W
R728	1-216-121-00	METAL CHIP	1M	5%	1/10W
R729	1-216-121-00	METAL CHIP	1M	5%	1/10W
R730	1-216-089-00	METAL CHIP	47K	5%	1/10W
R731	1-216-109-00	METAL CHIP	330K	5%	1/10W
R732	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R733	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R734	1-216-109-00	METAL CHIP	330K	5%	1/10W
R735	1-216-097-00	METAL CHIP	100K	5%	1/10W
R736	1-216-097-00	METAL CHIP	100K	5%	1/10W
R801	1-216-113-00	METAL CHIP	470K	5%	1/10W
R802	1-216-007-00	METAL CHIP	18	5%	1/10W
R803	1-216-035-00	METAL CHIP	270	5%	1/10W
R804	1-216-085-00	METAL CHIP	33K	5%	1/10W
R805	1-216-029-00	METAL CHIP	150	5%	1/10W
R806	1-216-121-00	METAL CHIP	1M	5%	1/10W
RV101	1-237-006-11	RES, ADJ, METAL GLAZE 47K			
RV201	1-237-006-11	RES, ADJ, METAL GLAZE 47K			
RV301	1-230-955-11	RES, VAR, CARBON 10K/10K			
RV601	1-237-004-11	RES, ADJ, METAL GLAZE 10K			
S301	1-554-613-00	SWITCH, SLIDE (TAPE)			
S302	1-570-397-11	SWITCH, SLIDE (DOLBY NR)			
S304	1-570-399-11	SWITCH, SLIDE (FWD/REV)			
S305	1-570-400-11	SWITCH, SLIDE (REC/PB)			
S701	1-570-548-11	SWITCH, LEAF (POWER)			
S702	1-570-398-11	SWITCH (FF/REW)			
S703	1-570-395-11	SWITCH, LEAF (DIR)			
T401	1-433-310-11	TRANSFORMER, BIAS OSCILLATION			
T801	1-447-864-11	TRANSFORMER, DC-DC CONVERTER			

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-528-052-00	BATTERY, ALKALINE MANGANIN (LR6)
1-542-071-11	MICROPHONE (C-3001)
3-329-793-02	LID, CUSHION
3-331-025-11	LABEL, MODEL NUMBER
3-333-133-01	CUSHION
3-333-134-01	SPACER (B)
3-335-923-01	(ET).....INDIVIDUAL CARTON
3-335-924-01	(AEP,UK)...INDIVIDUAL CARTON
3-335-927-01	CASE, CARRYING
3-527-213-00	LABEL, SERIAL NUMBER
3-703-710-01	STICKER, SONY SYMBOL (12)
3-765-093-01	(ET).....MANUAL, INSTRUCTION
3-765-093-11	(AEP,UK)...MANUAL, INSTRUCTION
3-765-093-41	(AEP).....MANUAL, INSTRUCTION
8-952-236-90	(ET).....HEADPHONE MDR-E212
8-952-266-94	(AEP,UK)...HEADPHONE MDR-A10L/B SET
X-3324-513-1	STAND ASSY, MICROPHONE
X-3329-646-2	CASE (B) ASSY, BATTERY
X-3329-657-1	(ET)....ATTACHMENT ASSY